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(54) AMUSEMENT MACHINES

(71) We, BELL-FRUIT MANUFACTURING COMPANY LIMITED, a British Company, of Leen Gate, Lenton, Nottingham, NG7 2ND, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to amusement machines, especially amusement-with-prizes machines.

All of the known amusement machines have included a coin or token freed mechanism which detects the insertion of a suitable coin or token into the machine by a player and responds by initiating a game on the machine or freeing the machine for the player to initiate a game. Further, if the machine awards prizes depending upon the results of games played on it, these prizes generally take the form of coins or tokens.

According to the present invention, an amusement machine is provided with a credit card read/write device into which a player inserts a credit card in order to play a game on the machine and which is adapted to read pre-recorded characteristics on the card corresponding to a number of game credits and to write on the card so as to change said pre-recorded characteristics; and control means which operates according to read signals received from said read/write device so as to free the machine for the playing of a game only if the number of game credits read is one or more, and which controls write signals applied to the read/write device so that the number of game credits recorded on the card is reduced by one each time a game is played on the machine.

The invention therefore allows a credit card to be used in place of the coins and tokens previously used to play amusement machines; such cards being purchased with a predetermined number of game credits recorded on them so that the player can subsequently play this number of games without having to obtain a suitable coin or token for each game.

In our earlier Patent Specification No. 1 391 060 we have disclosed an arrangement in which a ticket can be inserted in an amusement machine, the ticket carrying information which is read by the machine and which frees the machine for the playing of a single game; at the end of the game the machine prints on the ticket information on whether a win has been achieved and, if not, it in effect cancels the ticket. In contrast to this the present invention allows the playing of several games with the same card.

The invention is particularly applicable to amusement-with-prizes machines because the read/write device can readily be adapted to award appropriate prizes by writing on the card so as to increase the number of recorded game credits by numbers corresponding to said prizes. The player therefore wins the opportunity of playing further games using the credit card, and may be able to recover the monetary or goods value of the recorded game credits if the cards are deemed returnable. Also, such machines lack all forms of coin and token handling mechanisms, such as coin-freed operating mechanisms, coin sorting and storing means and coin dispensing means, and therefore they are generally simpler and more compact than the known machines. Also, they avoid the need for operators of the machines to collect coins and tokens that accumulate therein.

In one embodiment, the read/write device is such as to read the pre-recorded game credit characteristics on a card on insertion of the card into the device, and to change these characteristics by over-writing with new game credit characteristics as the card is ejected from the device, information of the number of pre-recorded game credits read by the read/write device being stored and used to compute the new number of game credits that is to be written onto the card as it is ejected.

Preferably, an amusement machine according to the invention includes a microprocessor that controls operation of the read/

write device and also other operating sequences of the machine, such as the actual game sequence.

The invention will now be described by way of example with reference to the accompanying drawings in which:—

Figure 1 is a schematic front view of an amusement machine according to the invention,

Figure 2 is a block diagram of the amusement machine of Figure 1, and

Figure 3 is a side view of a magnetic card read/write device used in the machine of Figure 1.

The illustrated amusement machine is of the kind which selects a combination of symbols at random during each game and awards prizes when predetermined prize-winning combinations occur. Said combination of symbols is selected by a reel mechanism 1 of a well known type comprising a set of co-axial independently rotatable reels 2 each of which carries a plurality of symbols 3 around its circumference and can assume any one of a plurality of predetermined stop positions in which it displays a corresponding one of the symbols on a payline in a display window 4 so that the reels together display a combination of symbols on the payline, there being three three reels and therefore a combination of three symbols in a row in the illustrated embodiment. During a game on the machine, the reels are spun by an electric motor and each is stopped at random at one of said stop positions by individual stop means.

The symbol 3 displayed by each reel 2 is detected by an individual detector that produces a coded output signal characteristic of said symbol, the detector being any one of the known types, such as rotary, switch means that uses rotation of the reel to selectively make and break electrical output circuits, or photoelectric or magnetic detector means that senses coded characteristics that rotate with the reel. These coded output signals are fed to decoder means which determines whether or not the signals correspond to the display of a prize-winning combination of symbols on the payline, and which signals the award of a corresponding prize for each prize-winning combination that is detected. Suitable decoder means is that disclosed in our Patent Application No. 15780/75 (Serial No. 1 531 754).

The machine is controlled by a microprocessor 5 which is interfaced with the machine through interface circuitry 6 and which operates according to programme instructions stored in a memory 7 so that the machine performs a set sequence of operations during each and every game including spinning and stopping the reels 2, decoding the detector output signals, and signalling the award of any prizes.

The machine also includes a credit card read/write device 8 into which a player inserts a credit card in order to play a game on the machine. The credit card has information pre-recorded on it corresponding to a number of game credits, and this information is read by the device 8 when the card is inserted and is fed via the interface circuitry 6 to the microprocessor 5 which operates according to programme instructions in memory 7 to determine whether or not one or more game credits are recorded on the card. If game credits are available, the microprocessor activates a game start actuator 9 so that the player can operate this to start a game. If no game credits are available, the game start actuator 9 remains ineffective and the microprocessor causes the read/write device 8 to return the card to the player.

The number of game credits recorded on the inserted credit card is also recorded via the microprocessor 5 in a random access memory 10, and once a game has been completed this number is reduced by one credit, corresponding to the game that has been played, and this reduced number of game credits is written by the device 8 on the card in place of the original pre-recorded number of game credits before the card is returned to the player.

Subtraction of one game credit occurs whether or not the game results in the award of a prize. However, if a game does result in a prize-winning combination of symbols, as detected by the decoder incorporated in the microprocessor 5 and memory 7, the award of a corresponding prize is signalled and this causes the microprocessor to add a corresponding number of game credits to the number recorded in the random access memory 10. This modified number is then written by the device 8 on the card in place game credits so that the prize is awarded in the form of additional game credits on the of the original pre-recorded number of card that is returned to the player.

The read/write device 8 is illustrated in more detail in Figure 3 and comprises an outer guide member 11 having a U-shaped inner guide wall 12, a guide roller 13 that is mounted within the outer guide member 11 so that its outer curved periphery 14 is located opposite the curved base portion of the guide wall 12, and two inner guide members 15 each located opposite a flank of the inner guide wall 12 so that a U-shaped feed channel 16 is formed between the outer guide member 11 and the inner guide roller 13 and guide members 15 for the passage of the credit card. The credit card is composed of a resilient material, preferably a plastics material, so that it is normally flat but conforms to the shape of the U-shaped channel 16 in use.

The roller 13 is connectaed via gearing (not shown) at one end of its shaft 17 to an electric drive motor (not shown), and two pressure rollers 18 are mounted on the outer guide member 11 so as to hold the card in driving engagement with the periphery of the roller 13 once it has been inserted into the channel 16 through an inlet slot 19 adjacent the lower flank of the U-shaped guide wall 12.

A microswitch 20 is mounted on the lower of the inner guide members 15 so that it is operated by the leading edge of a credit card when a player inserts this into slot 19. The switch 20 then passes a signal to the microprocessor 5 which produces a corresponding signal to energise the electric drive motor of roller 13. Thus, once the player has inserted the card far enough to engage between the roller 13 and the first of the pressure rollers 18, it is then automatically drawn into the channel 16 until the lagging end of the card frees the microswitch 20, which then signals the microprocessor to stop the drive motor of roller 13.

A magnetic read/write head 21 is mounted on the outer guide member 11 with its tip exposed through the upper flank of the guide wall 12 so that a magnetic recording strip on the card passes the head as the card is fed into channel 16. A pressure roller 22 is mounted on the upper of the inner guide members 15 opposite the head 21 so as to hold the card against the head.

The magnetic recording strip on the card has pre-recorded therein a number of game credits in binary code. This number is read by the head 21 on insertion of the card and is stored by the microprocessor in the random access memory 10, as described above.

When the game is completed, the microprocessor energises the drive motor of the roller 13 so that it rotates in the opposite sense to that when the card was inserted. The card is therefore ejected from channel 16 through the slot 19 until its lagging edge is free of roller 13. During this reverse movement of the card, the microprocessor causes the head 21 to write onto said magnetic recording strip on the card the number of game credits stored in random access memory 10, this number corresponding to the original number recorded on the card, less one and possibly increased by a number of prize game credits, as described above.

The player then withdraws the card from the slot 19, and the resultant release of the microswitch 20 serves to reset the machine for another game.

A second microswitch 23 is mounted on the outer guide member 11 so as to be operated by the leading edge of the inserted card after it has passed round the roller 13 and before it reaches the head 21. The signal from this microswitch is used to detect an inserted card and ensure that the roller 13 is only operated subsequently to eject the card.

If the number of game credits recorded on the inserted card is zero, the microprocessor operates the drive motor of roller 13 to eject the card without enabling the game sequence.

As well as having game credit information recorded on the credit card, other information may be provided. In particular, identifying characteristics may be recorded in the card to be read by the read/write head and analysed by the microprocessor so as to determine whether they match predetermined identifying characteristics, a game being allowed only if such a match is obtained. By these means, the use of forged or other credit cards beside those specially issued, can be avoided.

security

The machine also includes a video display means 24 that is controlled by the microprocessor so as to give instructions and information to a player via a cathode ray display screen 25. In particular, the display screen means may inform the player of the number of game credits recorded on his card at the beginning of a game and the number of game credits written onto his card at the end of a game. For example, the following video displays may be used:

"Insert Card"—displayed when machine not in use.

"Sorry no credit—Take card"—displayed when inserted card contains no game credits.

"You have x game credits—To play operate start button"—displayed when inserted card contains one or more (x) game credits.

"Sorry you have not won—Take card" —displayed when game does not result in a win.

"Symbol combination abc equals x game credits—Your credit state is now y game credits—Game over, take card"—displayed when game results in a prize-winning symbol combination abc and results in a prize of x game credits.

WHAT WE CLAIM IS:—

1. An amusement machine including a credit card read/write device into which a player inserts a credit card in order to play a game on the machine, and which is adapted to read pre-recorded characteristics on the card corresponding to a number of game credits and to write on the card so as to change said pre-recorded characteristics; and control means which operates according to read signals received from said read/write device so as to free the machine for the

playing of a game only if the number of game credits read is one or more, and which controls write signals applied to the read/write device so that the number of game credits recorded on the card is reduced by one each time a game is played on the machine.

2. An amusement machine as claimed in claim 1 which includes win decoder means to determine whether or not the game played on the machine results in one of a predetermined number of prize winning results and to signal the award of an appropriate prize, for each prize-winning result, and in which said control means receives said prize signals from said win decoder means and operates accordingly in producing said write signals for the read/write device so that the number of game credits recorded on the card is increased by a number on the card is increased by a number ber corresponding to said prize.

3. An amusement machine as claimed in claim 2 in which the control means includes memory means and operates to store therein the number of game credits read by the read/write device from the card and to change this number in accordance with said games played and prizes awarded, the control means then producing said write signal for the read/write head in accordance with the changed number in the memory means.

4. An amusement machine as claimed in any one of the preceding claims in which the read/write device is adapted to read said pre-recorded characteristics on the card and to change these characteristics by writing over said pre-recorded characteristics.

5. An amusement machine as claimed in claim 4 in which the read/write device comprises card feed means that feeds the card into the device along a fixed path and ejects the card along the same path in the reverse sense, and a read/write head that is controlled by the control means so as to read as the card is fed into the device and to write as the card is ejected from the device.

6. An amusement machine as claimed in claim 5 in which the read/write device includes switch means which is operated by insertion of a card and responds by triggering operation of the card feed means, and which operates to reset the machine for the next game when freed by subsequent withdrawal of the card from the device.

7. An amusement machine as claimed in any one of the preceding claims in which the read/write device is adapted to read identifying characteristics that are pre-recorded on the card, and in which the control means is adapted so that it will allow a game to be played only if predetermined identifying characteristics are read by the read/write device.

8. An amusement machine as claimed in any one of the preceeding claims in which the control means comprises a microprocessor.

9. An amusement machine as claimed in any one of the preceding claims which includes video display means that displays information of the number of game credits recorded on the card to the player.

10. An amusement machine substantially as herein described with reference to the accompanying drawings.

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1 SHEET This drawing is a reproduction of the Original on a reduced scale

FIG.1.

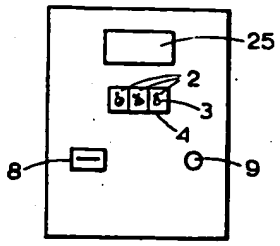

FIG.2.

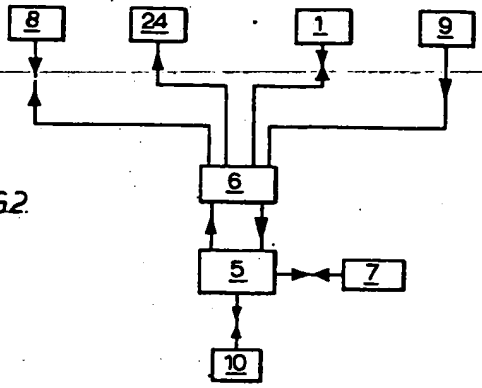

FIG.3.